Methodological Evaluation of Public Health Surveillance Systems in Nigeria: A Multilevel Regression Analysis for Efficiency Measurement

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Abstract

Public health surveillance systems play a crucial role in monitoring diseases and managing public health interventions in Nigeria. However, these systems often face challenges that affect their effectiveness. We employed a multilevel logistic regression model to analyse data from multiple sources, including government databases and surveys. Our primary outcome measures were the accuracy and timeliness of surveillance reports. The analysis revealed that funding levels significantly impacted the accuracy of disease reporting (OR = 1.5, $p < 0.05$), while geographical distribution influenced timeliness (OR = 2.3, CI: [1.4-3.8]). Our findings suggest that targeted investments in surveillance infrastructure and improved funding allocation can enhance the efficiency of public health systems. To improve the efficiency of public health surveillance systems, policymakers should prioritise investment in technology upgrades and financial support for under-resourced regions. Public Health Surveillance Systems, Multilevel Regression Analysis, Efficiency Measurement, Nigeria

ABSTRACT-ONLY PUBLICATION

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